

TELEVISION SCHEDULE SYSTEM WITH ACCESS CONTROL

5 BACKGROUND OF THE INVENTION

The present invention relates to a system for providing television schedule information, and more particularly to a television schedule information guide with capability for controlling access to television programs.

Systems are available for providing television schedule information to a user. For example, U.S. Patent No. B1 4,706,121 (Young), provides a television schedule system and process. In one embodiment of Young, the television schedule information is provided on the user's television screen. The user may supply selection criteria which are utilized by the Young system to make program selections, and the like. In addition, Young discloses a system which controls a television receiver to allow for automatic selection of programs and the automatic, unattended recording of programs that are listed in the television schedule information guide. The automatic, unattended recording of programs is achieved by controlling a videotape recorder (VCR) or other recording device.

20 SUMMARY OF THE INVENTION

The present invention is directed to a television schedule system with a user interface that allows a user to control access to television programs by time, rating, content, and/or channel. Furthermore, the user may set a limit on pay-per-view (PPV) spending to limit the purchase of PPV programs.

In a preferred embodiment, the television schedule system has a main menu. A user may select the "Parental Control" (parental control) menu from the main menu to enter the parental password. The parental password may be established from the main menu. After establishing and entering the parental password, the user may lock-out programs by channel, by rating, content, and/or by time from the parental control menu. The content description of the show may further have a corresponding "V-chip" classification based on V-chip rating data supplied by the FCC. Hence, the user may further lock out programs by V-chip

classification. In order to tune to a locked program, the parental password is preferably supplied.

In one embodiment, the user may select a "control viewing" menu from the main menu to enter a purchase password. The purchase password may also be established from the main menu. After establishing and entering the purchase password, the user may specify a PPV spending limit thereby limiting the purchase of PPV programs. The user may further specify the type of PPV programs allowed based on rating and content. In order to purchase beyond the spending limit, the purchase password is preferably supplied. In order to purchase restricted programs, both the parental and purchase passwords are preferably supplied.

If the user does not remember a password, the user may, for example, call the cable operator. The cable operator may set the password to null so the user may establish a new password.

Other features and advantages of the present invention will become apparent to those skilled in the art upon a perusal of the remaining portions of the specification and drawings. In the drawings, like reference numerals indicate identical or functionally similar elements.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a preferred embodiment of a television system according to the present invention;

Fig. 2A shows a preferred embodiment of a pop-up menu shown to a user if a password has not been established, and the user selects parental control from the main menu of a television schedule guide;

Fig. 2B shows a preferred embodiment of a parental control menu shown to a user after a parental password has been established and entered;

Fig. 2C shows a preferred embodiment of a pop-up shown when the user selects a "lock by channel" feature;

Fig. 2D shows a preferred embodiment of a pop-up shown when the user selects a "lock by rating and content" feature;

Fig. 2E shows a preferred embodiment of a pop-up shown when the user selects a "lock by time" feature;

Fig. 2F shows a preferred embodiment of a pop-up shown to a user if a purchase password has not been established, and the user selects a "Set IPPV Spending limits" feature from the control viewing menu;

Fig. 2G shows a preferred embodiment of a pop-up shown to a user if a purchase password has been established, and the user selects the "Set IPPV Spending limits" feature from the control viewing menu;

Fig. 2H shows a preferred embodiment of a IPPV spending limit pop-up shown to a user after a proper purchase password has been established and entered;

Fig. 3 is a process flow chart for determining whether a user could tune to a program;

Fig. 4 is a process flow chart for the operation of the parental control feature;

Fig. 5 is a process flow chart for the operation of the purchase control feature;

Fig. 6 is a process flow chart for verifying a password and limiting a user's number of tries in entering the parental control or purchase password;

Fig. 7 is a process flow chart for determining whether a program has a restricted V-chip classification, and whether access should be allowed;

Fig. 8 is a process flow chart for changing the parental control or purchase password;

Fig. 9 is a process flow chart for establishing the parental control or purchase password; and

Fig. 10 is a process flow chart for removing the parental control or purchase password.

DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention provides a television (TV) schedule system with capability for controlling access to TV programs. Fig. 1 illustrates a preferred embodiment of TV system 1 in which the invention may be utilized. As shown, system 1 includes a distribution center 10 and multiple receiving locations. Distribution center 10 compiles data for a data-stream. In a preferred embodiment, this data-stream is broadcast to receiving locations 16, 18, 20, and 22. Several methods are available for broadcasting the data-stream from distribution center 10 to

5 another embodiment, the data-stream is provided to receiving locations 16, 18, 20, and 22 via transmission line 13. Transmission line 13 may be, for example, optical fiber, coax cable, telephone line, or the like. In yet another embodiment, peripheral devices, which are located within the receiving locations, receive the data-stream from, for example, a local service provider 40. Service provider 40 receives the data-stream from distribution center 10 via line 17, and broadcasts the data-stream to the receiving peripheral devices via satellite 15 (or another satellite), or via lines 19 and 13. The receiving peripheral devices may be televisions 30, televisions 34, VCRs 32, VCRs 36, and/or set-top boxes 38. In still further embodiments, PCTVs may be utilized, or the data-stream may be provided to a personal computer for use with the computer and/or more of the above devices.

In the preferred embodiment, information in the data-stream includes TV schedule information. Software located within the peripheral devices utilize the schedule information provided in the data-stream to generate a TV schedule guide. The software is stored on a computer-readable storage medium 42 such as a ROM, RAM, disk, or other storage device. If the TV schedule guide is in a grid format, for example, the available channels may be listed on the "y" axis and various times may be listed on the "x" axis. The user may tune to a program within the TV schedule guide by highlighting the program within the guide, and selecting the program. The user may also select one or more desired programs which are listed in the TV schedule guide for automatic, unattended recording. For more information on how the TV schedule system displays information, and its tuning and automatic recording capabilities, see U.S. Patent No. B1 4,706,121 and U.S. Patent No. 5,151,789. Both these patents, like the present patent application, are assigned to StarSight Telecast, Inc., and are hereby incorporated by reference in their entirety for all purposes.

The system further has the capability of preventing viewers from tuning to or viewing one or more TV programs. TV programs may be blocked by channel, rating, content, and/or time. If the user turns on the TV during a locked time, or

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channels. The user may use the previously mentioned arrow keys to navigate within pop-up 56. A channel is locked after a user highlights and selects the channel. A lock symbol will be placed next to the channel icon to indicate that the channel is locked. To unlock a channel, the user may highlight and select the
5 locked channel. The lock symbol next to the channel icon will then disappear to indicate the lock is removed. The user may use the EXIT key to return to pop-up 54 of the parental control menu.

Since the system stores program information, it is able to determine whether a current or future program is shown on a restricted channel. The system
10 may also determine whether a program falls within a restricted rating and/or content, V-chip classification, or time period. Hence, if a lock is placed on a channel on which there are programs scheduled for recording, a pop-up will appear warning the user of the conflict. If the user ignores the pop-up, it will time out in three seconds, the channel will be locked, and the recording will occur without the
15 need for a password as it was set before the lock was enabled. Once a channel is locked, a user may not tune to, record, or purchase any program on that channel unless the user enters the correct password. However, upon entering the correct password, the user may schedule recording of future programs. At the time of the scheduled recording, the system unlocks the locked channel, tunes to the channel,
20 and records the program. When the program is over, the system relocks the channel.

Fig. 2D is a preferred embodiment of pop-up 60 shown when the user elects to lock programs by rating and/or content. As can be seen, two lists are shown to the user, one by rating, and one by content. The user may lock by
25 content and/or rating by highlighting the relevant content and/or rating on the pop-up and inputting the SELECT key. Programs may be locked using more than one category of rating and/or content. Furthermore, the content description on pop-up 60 may include information corresponding to data supplied by the V-chip. The V-chip data may be enclosed within parenthesis and will indicate the V-chip attribute classification of the program. For example, the content category "Violence" may
30 have corresponding V-chip attribute mildly violent (V2), moderately violent (V3), and the like. When the user locks shows according to rating, all higher ratings are

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automatically locked. Since the show contents are not listed in order of severity, locking one content does not automatically lock any others.

The user may also lock specified time periods to prevent TV viewing during those times. The user may further specify the frequency of the lock, e.g.,
5 for a single day, for Monday through Friday only, weekends only, or for every day of the week. Fig. 2E shows pop-up 62, which requests user input for the time period during which TV viewing should be prevented. As shown, the user may specify the time to begin locking (the default time is 2:30pm), the time to end locking (the default time is 5pm), and the frequency of the lock (the default
10 frequency is for a single day). In the situation where the user has set these values before, the system remembers the values and displays them when pop-up 62 is shown.

If TV viewing is attempted during a locked period, the system will mute the audio, and display a blue screen over video. A pop-up will appear asking for
15 the parental password. When the correct password is entered, the solid blue screen will disappear, and audio will be re-enabled. If a lock is placed on a time period during which there are programs scheduled for recording, a pop-up will appear warning the user of the conflict. If the user ignores the pop-up, it will time out in three seconds, the channel will be locked, and the recording will occur without the
20 requirement of a password as it was set before the lock was enabled. However, all future recordings scheduled during the locked period will require a password.

Fig. 2F shows a preferred embodiment of pop-up 64 shown to a user if a purchase password has not been established, and the user selects the "Set IPPV
Spending limits" feature from control viewing menu 66. IPPV stands for impulse
25 pay-per-view, and refers to PPV programs which are purchased via a user input device, for example, a remote control. It is different from traditional PPV programs which require the user to call the program provider on a phone to purchase the program. The user may establish the purchase password, from main menu 50, by inputting the SELECT key either by pressing the key on the user input
30 device, or selecting it on the TV schedule guide. Fig. 2G shows a preferred embodiment of pop-up 68 shown to a user if a purchase password has been established, and the user selects the "Set IPPV Spending limits" feature from control viewing menu 66. In this case, the user would simply enter the purchase password

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Once the purchase password has been established and entered, the user will see IPPV spending limit pop-up 70 (as shown in Fig. 2H), and the user may enter the total dollar amount to which IPPV spending should be limited before the system requires a password to enable purchasing. The default spending amount is zero, in which case, the user needs to enter the purchase password for all purchases. Where a dollar amount greater than zero is set, this is the amount the user may spend before the purchase password is required to make additional purchases. To set the amount, the user may input the right arrow key, and with each input of the right arrow key, a dollar would be added to the limit. To decrease the amount, the user may use the left arrow key. The user may use the arrow keys to reset the dollar amount whenever desired.

Alternatively, the user may unlock individual programs by tuning directly to the programs from either the TV or the TV schedule guide, and entering the correct password. If the user tunes to a locked channel, the system displays a blue screen over the TV screen, and mutes the audio. A pop-up will appear requesting the parental password. If the correct password is supplied, the system removes the blue screen and restores the audio. However, in this case, when the user tunes off a previously locked channel, the parental lock will be automatically restored.

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password has not been established, the system will also proceed with the buying process at step 208.

Fig. 6, which describes step 172 in greater detail, illustrates a process flow chart for verifying a password and limiting a user's number of tries in entering the purchase or parental password. At step 250, the user is asked to supply the applicable password. A step 252 receives the user's input, and a step 254 checks whether the password is in a proper format. If the password is improper, for e.g., it has too many characters, a step 256 displays a message informing the user the password is illegal. Step 252 is repeated, and the user may re-enter a proper password. As shown, the user may re-enter the password an infinite number of times if the password is rejected as being improper.

Once the user has entered a proper password, a step 258 verifies that the password entered is correct. If so, a step 260 allows the user access to the locked program. However, when the password entered is incorrect, a step 262 tracks the number of times the user attempts to enter an incorrect password. A step 264 compares the count at 262 with the number 3. If the count at 262 is less than 3, a step 256 displays the illegal password pop-up and the user may re-enter the password at step 252. If the user has attempted to enter a correct password more than three times, a step 266 shows a pop-up informing the user there has been too many attempts to enter the password, and the user has to wait fifteen minutes before attempting to enter the password again. Steps 268 and 270 set the Flag, and start the fifteen minute restriction before allowing the user to re-enter a password.

In a preferred embodiment, disconnecting the system from the power supply will not circumvent the fifteen minute restriction; instead, the user will have to wait longer to re-enter the password as the system resets the fifteen minute period when it is re-connected to the power supply. The system restricts the user to three attempts at entering the correct password to ensure the security of the password. Since an unauthorized user will preferably have to wait at least 15 minutes after every three tries, the unauthorized user is not as likely to crack the password.

Fig. 7, which describes step 178 in greater detail, illustrates a process flow chart for determining whether a program has restricted V-chip classification, and whether the user should be allowed access. Since V-chip data comes from the video stream of a channel, one way to determine whether a program has restricted

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Steps 376 and 378 are repeated until the password entered at step 376 matches the password entered at step 370. Or, the user may exit the process, in which case, the password is unchanged. Alternatively, after step 378 made its comparison, if password 370 is different from password 376, steps 370-378 are repeated. This means that the user may re-enter the new password at step 370 to ensure that the entry at step 370 is correct, and reconfirm the password at step 376. Step 378 will compare the two passwords, if they are the same, a step 380 changes the old password to the new password.

Fig. 9 illustrates a process flow chart for establishing the parental control or purchase password. A step 400 requests for the password, and a step 402 receives the user password input. At step 404, the system checks whether the password is in proper form, if not, a step 406 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper password at step 402. If the password entered is in proper form, the user is requested to re-enter the password at step 408 to confirm the password entered is indeed the password desired. A step 410 compares the password entered at step 402 with the password entered at step 408. If the two passwords are different, the user is asked to re-enter the password again at step 408 to confirm the password entered is the password desired, and step 410 again compares the passwords entered.

Steps 408 and 410 are repeated until the password entered at step 408 matches the password entered at step 402. Or, the user may exit the process, in which case, a password is not created. Alternatively, after step 410 made its comparison, if password 402 is different from password 408, steps 402-410 are repeated. This means that the user may re-enter the password at step 402 to ensure that the entry at step 402 is correct, and re-confirm the password at step 408. A step 410 will compare the two passwords. If they are the same, a step 412 establishes the password as the current password.

Fig. 10 illustrates a process flow chart for removing the parental control or purchase password. At step 450, the system displays a pop-up explaining to the user that all programs may be viewed free of restrictions if the user removes the password and asks whether the user wishes to proceed. If the user decides to proceed at step 452, a step 454 requests that the user enters the password. If not, the user exits the process. A step 456 receives the user input if the user decides to

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proceed, and a step 458 checks whether the password is in proper form. If not, a step 460 displays an illegal password pop-up, and the user has an unlimited number of times to re-enter a proper password at step 456. If the password entered is in proper form, a step 462 verifies that the password is in fact the correct password.

- 5 A step 464 keeps count of the number of times an incorrect password is entered.

As shown by steps 466, 460 and 456, the user is given three attempts to enter a correct password. After three attempts, if the password entered is still incorrect, step 468 displays a "Too Many Attempts" pop-up. The user has to wait fifteen minutes before the system will allow any further password input attempts, as steps 470 and 472 set the flag and start the fifteen minute restriction. As mentioned, the user preferably may not circumvent the fifteen minute wait by disconnecting the system from the power supply. The user is allowed to remove the password at step 474 if the user supplied the correct password at step 462.

- 10 The above description is illustrative and not restrictive. Variations of the invention will become apparent to those skilled in the art upon review of this disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.
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